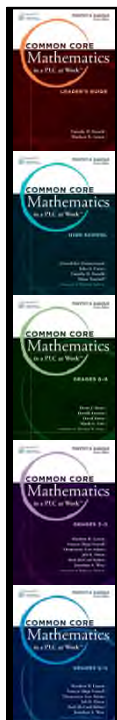


# Implementing Common Core Mathematics: How do you build capacity to ensure math success for all?

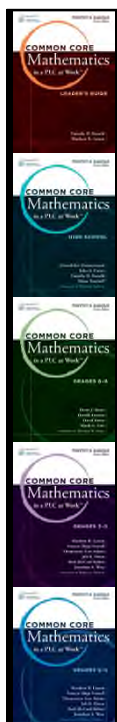
**Mona Toncheff**  
**Math Content Specialist**  
**Phoenix Union High School District**  
[toncheff@phoenixunion.org](mailto:toncheff@phoenixunion.org)  
<http://puhsdmath.blogspot.com>  
**@toncheff5**



***Ultimately there are two kinds of schools: learning enriched schools and learning impoverished schools. I have yet to see a school where the learning curves . . . of the adults were steep upward and those of the students were not. Teachers and students go hand and hand as learners . . . or they don't go at all...***

Roland Barth - 2004



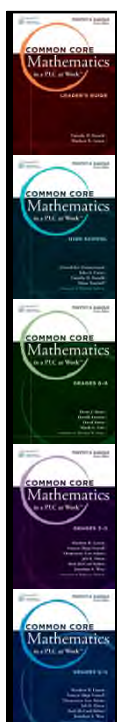


## Learning Targets



I can create a plan for building CCSS-M collective capacity by:

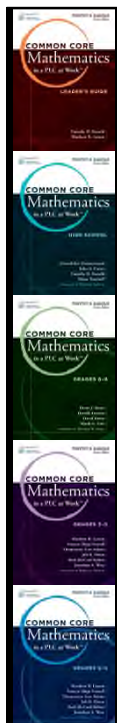
1. Understanding how to use PLCs to create a collective response to learning.
2. Use a unit-by-unit assessment cycle to evaluate students' mathematical understanding.
3. Analyze Tier 1 interventions to collaborate on the CCSS-M high expectations.



## E2 Math Equity and Excellence for all

If you want to change and improve the climate and outcomes of schooling both for students and teachers, there are features of the school culture that have to be changed, and if they are not changed, your well-intentional efforts will be defeated.

–Seymour Sarason (1996)  
*Revisiting the Culture of the School*

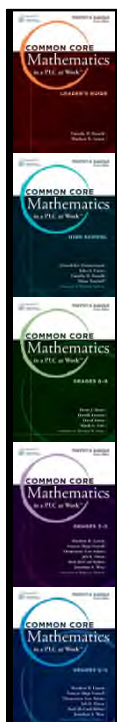


## PLC's at Work™: Big Idea #1

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The **PLC process** is built on the pillars of Mission, Vision, Values and Goals

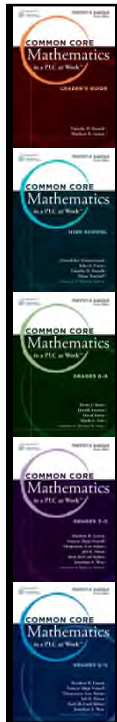
Vision  
Mission  
& Values



## Mission-The why

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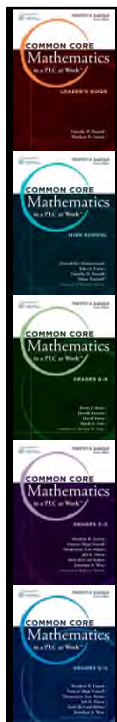
Fundamental purpose-clarifies **why** we exist as a school, team, program...



## ***Vision-The What***

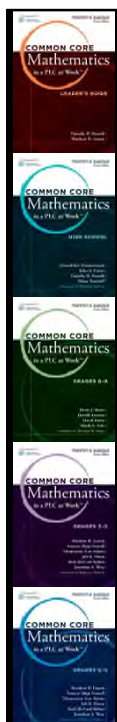
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The compelling future,  
provides direction and  
places boundaries on  
adult behavior



***A vision cannot be true or false  
but ultimately is evaluated  
against other possible  
directions for the school or  
district...***

***What is the vision of  
this Common Core Stuff?***



## What is your CCSS-M vision?

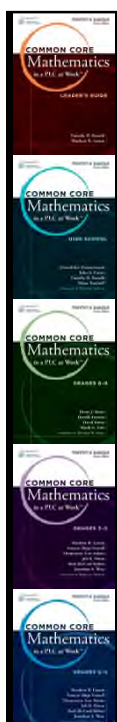
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**Vision- What do we want to become?**

The PUHSD Mathematics program, *E<sup>2</sup> Math* wants to excel in all areas of teaching and learning.

We want to be the role model for:

- Professional Learning Communities
- Collaborative learning for the 21<sup>st</sup> century for teachers and students
- Innovative technology
- College and Career readiness
- Commitment to continual learning



## The PUHSD Math Vision...

*The grade level or course based collaborative team is the fundamental building block of the PLC journey...*



**Phoenix Union High School District**

***$E^2$  Math***

**Equity and Excellence in Mathematics**

Alhambra  
Betty H. Fairfax  
Bioscience Bostrom  
Camelback  
**Attitude**  
Carl Hayden Central  
Cesar Chavez  
Cyber is Desiderata  
Franklin Maryvale  
**Everything**  
Metro Tech North  
South Mountain  
Suns-Diamondbacks  
Trevor G. Browne

**Five Year Plan  
2013-2018**

## *E<sup>2</sup> Math* *5 year plan*

### **Mission- What is our purpose?**

To ensure the mathematics academic success of all Phoenix Union High School District students

- E<sup>2</sup>**     **E**quity and **E**xcellence for all students
- M**       **M**otivate: “Turn on” our students to math- “Yes you can!”
- A**       **A**chievement for all: Produce math competent students ready for college and beyond
- T**       **T**ools: Provide the tools necessary to optimize the math experience of our students
- H**       **H**igher order thinking skills: Create mathematically proficient students

### **Vision- What do we want to become?**

The PUHSD Mathematics program, *E<sup>2</sup> Math* wants to excel in all areas of teaching and learning.

We want to be the role model for:

- Professional Learning Communities
- Collaborative learning for the 21<sup>st</sup> century for teachers and students
- Innovative technology
- College and Career readiness
- Commitment to continual learning

### **Values- how must we behave in order to make our vision a reality?**

The PUHSD Mathematics program, *E<sup>2</sup> Math* values:

- Collaborative PLC time and meetings (local and district-wide) for job-embedded PD
- Continual support for teachers to provide rich meaningful mathematics
- Required interventions early so all students are successful
- Data-driven decision making processes
- Rigorous curriculum for all students
- Reflective practices for teachers and students
- Embracing change to meet the PUHSD vision
- Constantly evaluating the four critical questions of a PLC: What do students need to know and be able to do? How will we know when they have learned it? What will we do when they have not learned it? What will we do when they already know it?  
(DuFours, 2008)

### **Strategic Goals of *E<sup>2</sup> Math* :**

The purpose of the *E<sup>2</sup> Math* is to create equity and excellence for all math students in Phoenix Union High School District. We will complete this by engaging in the following:

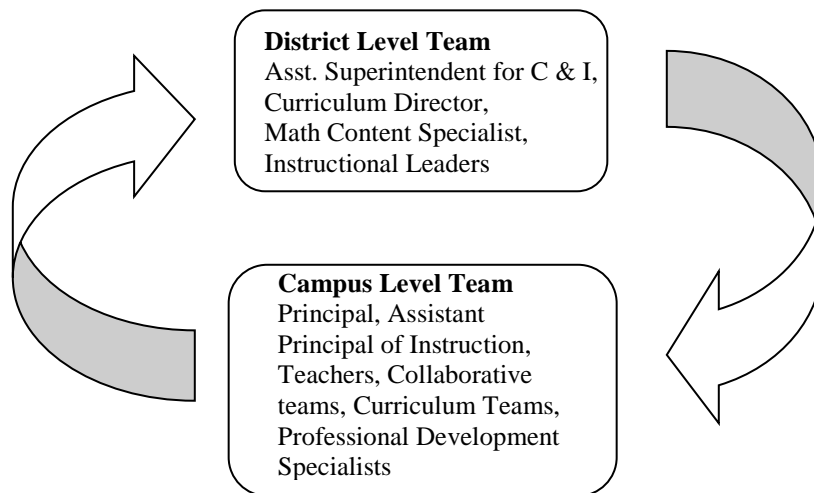
1. Ensure curriculum provides rigorous learning opportunities and prepares students to meet the demands of the Common Core State Standards (CCSS).
2. Focus on the key instructional shifts (focus, coherence, and rigor) in the CCSS by providing instructional units/lessons that develop student’s mathematical practices.
3. Encourage reflection and active learning for all students, teachers, and leaders.
4. Enrich students through “accelerated” programs to increase college and career readiness.
5. Integrate advanced technology to make mathematics meaningful and relevant.
6. Sustain a system of articulation with our partner districts to provide a seamless transition from 8<sup>th</sup> grade to high school mathematics.

***E<sup>2</sup> Math***  
***5 year plan***

**SMART Goals for Mathematics:**

- By 2018, every student will meet or exceed state standard in mathematics as measured by state assessment.
- Each year, every school will progressively increase the percentage of students meeting or exceeding the standards in math, as measure by state assessment.
- Each year, each campus level team will increase the percentage of students that pass the district final exam.
- Each year, campus level teams will increase the number of students A, B, C passing rate over the district rate of 70%.

**District Math Team**



**The Role of the District Math Team and the Campus Level Team**

Facilitate the implementation of the PUHSD Math 5-year plan.



## *E<sup>2</sup> Math* *5 year plan*

### General Timeline

\*Each semester, the 5-year plan will be evaluated by the district level team. Modifications will be made as needed.

### 2013-2014

Curriculum	Technology	Instruction and Assessments
<ul style="list-style-type: none"> <li>Implement the Geometry 1-2 AZ 2010 standards - The PARCC Assessment will be piloted this year in AZ</li> <li>Algebra 3-4 and Algebra 3-4 honors will pilot tasks and assessment items because they will be in full implementation in 2014-2015</li> <li>Algebra 1-2 will be in year 2 of implementation</li> <li>Pre-calculus and all other 4 years will complete their curriculum</li> <li>Continue working on Lessons Plan for CCSS and utilize Equip rubric to evaluate artifacts</li> <li>Monitor Personal Curriculum</li> <li>Implement Principles of Math Technology 1-2</li> <li>Implement Survey of Mathematics course (dual enrollment MAT 112)</li> <li>Dual enrollment opportunities with GCU</li> <li>Align Intro to HS summer curriculum to CCSS-M</li> </ul>	<ul style="list-style-type: none"> <li>Continue integration of technology in math classrooms (Smart Boards, Navigators, Document cameras, graphing calculators, clickers) to increase student engagement</li> <li>TI-Nspire and new calculators to replace old calculators</li> <li>Training on the modeling for Geometry (Dynamic graphing software)</li> <li>Purchase “clickers” with CCSS Geometry implementation</li> <li>Synergy- learning based gradebook for Geometry</li> <li>PLC structure for gathering data to inform instruction</li> <li>Increase use of E2020 to support Concept recovery</li> <li>Create CCSS Geometry Concept units in E2020</li> </ul>	<ul style="list-style-type: none"> <li>District wide PLC time for singleton teachers once a semester</li> <li>All teachers contributing members of one or more PLCs</li> <li>Continue articulation efforts</li> <li>Continue work with summer school opportunities for enrichment</li> <li>GQT will be assessed on the new standards</li> <li>PARCC assessments- create open constructed items for CCSS courses - Pilot dynamic assessment items</li> <li>Focus on Tier 1- Core instruction</li> <li>Assessment blueprints for Algebra I, Geometry, Algebra II with Mathematical Practices embedded</li> <li>Modified assessments reviewed</li> <li>Focus on DOK levels an assessments</li> <li>Implement Tier 2-3 structures for bottom Quartile</li> <li>AFL- Create recovery assessments for Geometry</li> <li>Assist partner district with designing accelerated programs</li> </ul>

### 2014-2015

\*PARCC Implementation year

Curriculum	Technology	Instruction and Assessments
<ul style="list-style-type: none"> <li>Implement the Algebra 3-4 AZ 2010 standards - The PARCC Assessment will be given this year</li> <li>Continue working on Lessons Plan for CCSS and utilize Equip rubric to evaluate artifacts</li> <li>Instructional resources for Algebra and Geometry</li> <li>DOK and PARCC Cognitive complexities</li> <li>Monitor Personal Curriculum</li> <li>Instructional Rounds or coaching model at all sights</li> </ul>	<ul style="list-style-type: none"> <li>Continue integration of technology in math classrooms (Smart Boards, Navigators, Document cameras, graphing calculators, Airliners) to increase student engagement and more dynamic application of concepts (to align with PARCC)</li> <li>TI-Nspire technology added</li> <li>PD on TI-Nspire Technology</li> <li>Training on the modeling Conceptual category</li> <li>Purchase “clickers” with CCSS implementation for upper levels</li> </ul>	<ul style="list-style-type: none"> <li>Include technology use on all assessments to align with PARCC calculator policy</li> <li>All teachers contributing members of one or more PLCs</li> <li>Continue articulation efforts</li> <li>Continue work with summer school opportunities for enrichment</li> <li>PARCC assessments- create open constructed items for CCSS courses - Pilot dynamic assessment items</li> </ul>

***E<sup>2</sup> Math***  
***5 year plan***

<ul style="list-style-type: none"> <li>Expand Accelerate to Calculus (to align with CCSS-M curriculum)</li> <li>Continue working on Lessons Plan for CCSS and utilize Equip rubric to evaluate artifacts</li> <li>Monitor Personal Curriculum</li> </ul>	<ul style="list-style-type: none"> <li>Emphasize current technology to support “daily math”</li> <li>Application of technology</li> <li>Synergy- learning based gradebook for Algebra 3-4</li> <li>Align E2020 to Algebra II course</li> <li>Robust e-resources (transition from text to online)</li> </ul>	<ul style="list-style-type: none"> <li>RRTI</li> <li>Assessment blueprints for upper level courses with Mathematical Practices embedded</li> <li>Modified assessments reviewed</li> <li>AFL-Create recovery assessments for Algebra 3-4</li> </ul>
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**2015-2016**

<b>Curriculum</b>	<b>Technology</b>	<b>Instruction and Assessments</b>
<ul style="list-style-type: none"> <li>Continue working on Lessons Plan for CCSS and utilize Equip rubric to evaluate artifacts</li> <li>DOK</li> <li>Monitor Personal Curriculum</li> <li>Instructional Rounds or coaching model at all sights</li> <li>Upper-level alignment (if needed)</li> <li>Summer School Course revisions (Intro to HS and CCA)</li> <li>PARCC tasks embedded in curriculum</li> </ul>	<ul style="list-style-type: none"> <li>Continue integration of technology in math classrooms (Smart Boards, Navigators, Document cameras, graphing calculators, Airliners) to increase student engagement and more dynamic application of concepts (to prepare for PARCC)</li> <li>TI-Nspire support</li> <li>Training on the modeling conceptual category</li> <li>Purchase “clickers” with CCSS implementation for upper levels</li> <li>Emphasize current technology to support “daily math”</li> <li>Synergy- learning based gradebook for upper level courses</li> <li>PARCC embedded tasks with technology integration</li> <li>E-resources for upper level courses</li> <li>Online learning environment provided for upper level courses</li> </ul>	<ul style="list-style-type: none"> <li>Include technology use on all assessments to align with PARCC calculator policy</li> <li>All teachers contributing members of one or more PLCs</li> <li>Continue articulation efforts</li> <li>Continue work with summer school opportunities for enrichment</li> <li>PARCC assessments- create open constructed items for CCSS courses - Pilot dynamic assessment items</li> <li>RRTI</li> <li>Assessment blueprints for upper level courses with Mathematical Practices embedded</li> <li>Modified assessments reviewed</li> <li>Create recovery assessments for Algebra 3-4</li> <li>Assist partner district with designing accelerated programs</li> </ul>

**2016-2017**

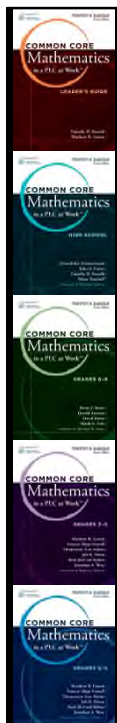
<b>Curriculum</b>	<b>Technology</b>	<b>Instruction and Assessments</b>
<ul style="list-style-type: none"> <li>Continue working on Lessons Plan for CCSS and utilize Equip rubric to evaluate artifacts</li> <li>Monitor Personal Curriculum</li> <li>Course revisions for CCSS Algebra I (year 3 of implementation) , CCSS Geometry (year 2 of implementation)</li> <li>DOK and cognitive complexities</li> <li>Create online concept recovery that can be incorporated with our learning management system</li> </ul>	<ul style="list-style-type: none"> <li>Continue integration of technology in math classrooms (Smart Boards, Navigators, Document cameras, graphing calculators, Airliners) to increase student engagement and more dynamic application of concepts (to prepare for PARCC)</li> <li>Teachers will use GDS to demonstrate critical math concepts based on data</li> <li>PARCC embedded tasks with technology integration</li> <li>Resource adoption for Algebra I,</li> </ul>	<ul style="list-style-type: none"> <li>Include technology use on all assessments to align with PARCC calculator policy</li> <li>All teachers contributing members of one or more PLCs</li> <li>Continue articulation efforts</li> <li>Continue work with summer school opportunities for enrichment</li> <li>PARCC assessments- create open constructed items for CCSS courses - dynamic assessment items added to assessment bank</li> <li>RRTI</li> </ul>

***E<sup>2</sup> Math***  
***5 year plan***

	Geometry, Algebra II	<ul style="list-style-type: none"> <li>• Assessment blueprints for upper level courses</li> <li>• Modified assessments reviewed</li> <li>• Create recovery assessments for Algebra 3-4</li> <li>• Assist partner district with designing accelerated programs</li> </ul>
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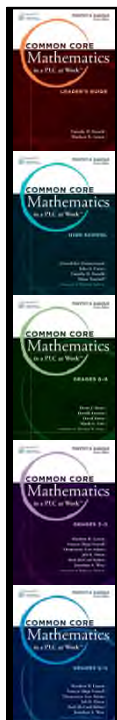
**2017-2018**

<b>Curriculum</b>	<b>Technology</b>	<b>Instruction and Assessments</b>
<ul style="list-style-type: none"> <li>• Continue working on Lessons Plan for CCSS and utilize Equip rubric to evaluate artifacts</li> <li>• Monitor Personal Curriculum</li> <li>• Course revision Algebra II (year 2 of implementation), course revision Pre-Calculus</li> </ul>	<ul style="list-style-type: none"> <li>• Continue integration of technology in math classrooms (Smart Boards, Navigators, Document cameras, graphing calculators, Airliners) to increase student engagement and more dynamic application of concepts (to prepare for PARCC)</li> <li>• Build e-resources for upper level courses</li> <li>• Resource adoption for Upper-level courses</li> <li>• </li> </ul>	<ul style="list-style-type: none"> <li>• Include technology use on all assessments to align with PARCC calculator policy</li> <li>• All teachers contributing members of one or more PLCs</li> <li>• Continue articulation efforts</li> <li>• Continue work with summer school opportunities for enrichment</li> <li>• PARCC assessments- create open constructed items for CCSS courses - Pilot dynamic assessment items</li> <li>• RRTI</li> <li>• Assessment blueprints for upper level courses</li> <li>• Modified assessments reviewed</li> </ul> <p>Create recovery assessments for Algebra 3-4</p> <p>Assist partner district with designing accelerated programs</p>



## The PUHSD Math Vision...

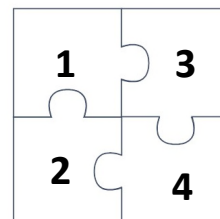
*The WORK of the collaborative team revolves around 4 critical questions*

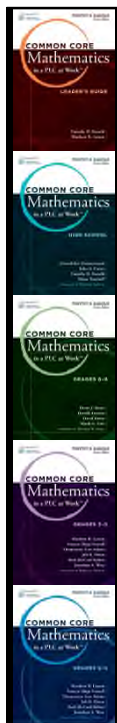


## The 4 Critical PLC Questions

**1) What is it we want our students to learn? (Guaranteed and Viable)**

**2) How will we know if they are learning? (Assessments Instruments and Scoring Processes –**

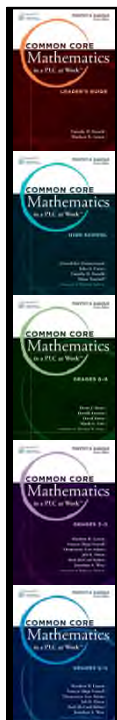
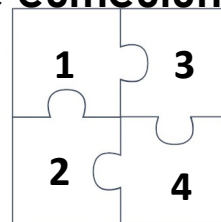




## The 4 Critical PLC Questions

**3) How will we respond when students do not learn? (*RRTI Processes and more*)**

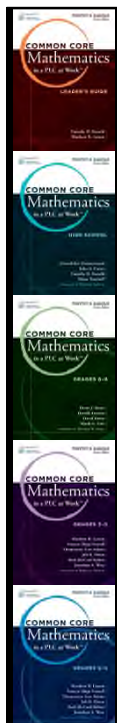
**4) How will we enrich and extend the learning for those students that are proficient? (*Deepening the curriculum*)**



## Creating Your One minute TPOV for Professional Learning Culture!

Based on your understanding of PLCs, what are the vital and non-negotiable adult behaviors necessary to successfully implement the Common Core?

Use the Poster paper  
Keep the middle free

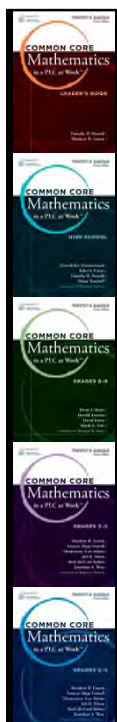


## Creating Your One minute TPOV for Professional Learning Culture!

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*In the Center of the poster paper use the adult behaviors you have listed to create a simple but clear vision statement for your Professional Learning Culture....*

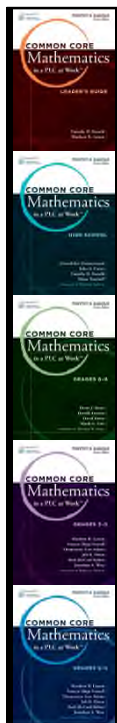
*(18 words or a picture!)*



## Values -How

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The collective adult commitments to *action* that guide all behavior

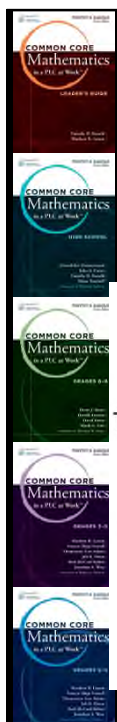


## Values -How

Values- how must we behave in order to make our vision a reality?

The PUHSD Mathematics program, *E<sup>2</sup> Math* values:

- Collaborative PLC time and meetings (local and district-wide) for job-embedded PD
- Continual support for teachers to provide rich meaningful mathematics
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- Reflective practices for teachers and students
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- Constantly evaluating the four critical questions of a PLC: What do students need to know and be able to do? How will we know when they have learned it? What will we do when they have not learned it? What will we do when they already know it? (DuFours, 2008)



## Values -How

### The high leverage actions of Collaborative Teams

**Figure 1.5:  
High-Leverage Unit-By-Unit Actions of  
Mathematics Collaborative Teams**

#### Teaching and Learning

1. The team designs and implements agreed-on prior knowledge skills to be assessed and taught during each lesson of the unit. The collaborative teacher team reaches agreement for teaching and learning in the lessons and unit.
2. The team designs and implements agreed-on lesson-design elements that ensure active student engagement with the mathematics. Students experience some aspect of the CCSS Mathematical Practices, such as Construct viable arguments and critique the reasoning of others or Attend to precision, within the daily lessons of every unit or chapter.
3. The team designs and implements agreed-on lesson-design elements that allow for student-led summaries and demonstrations of learning the daily lesson.
4. The team designs and implements agreed-on lesson-design elements that include the strategic use of

## **Figure 1.5: High-Leverage Unit-By-Unit Actions of Mathematics Collaborative Teams**

### **Teaching and Learning**

1. The team designs and implements agreed-on prior knowledge skills to be assessed and taught during each lesson of the unit. The collaborative teacher team reaches agreement for teaching and learning in the lessons and unit.
2. The team designs and implements agreed-on lesson-design elements that ensure active student engagement with the mathematics. Students experience some aspect of the CCSS Mathematical Practices, such as Construct viable arguments and critique the reasoning of others or Attend to precision, within the daily lessons of every unit or chapter.
3. The team designs and implements agreed-on lesson-design elements that allow for student-led summaries and demonstrations of learning the daily lesson.
4. The team designs and implements agreed-on lesson-design elements that include the strategic use of tools—including technology—for developing student understanding.

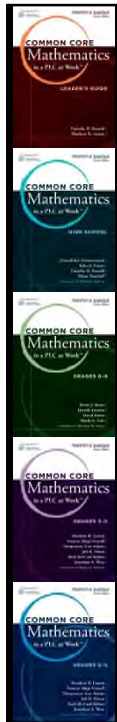
### **Assessment Instruments and Tools**

1. The team designs and implements agreed-on common assessment instruments based on high-quality exam designs. The collaborative team designs all unit exams, unit quizzes, final exams, writing assignments, and projects for the course.
2. The team designs and implements agreed-on common assessment instrument scoring rubrics for each assessment in advance of the exam.
3. The team designs and implements agreed-on common scoring and grading feedback (level of specificity to the feedback) of the assessment instruments to students.

### **Formative Assessment Feedback**

1. The team designs and implements agreed-on adjustments to instruction and intentional student support based on both the results of daily formative classroom assessments and the results of student performance on unit or chapter assessment instruments such as quizzes and tests.
2. The team designs and implements agreed-on levels of rigor for daily in-class prompts and common high-cognitive-demand tasks used to assess student understanding of various mathematical concepts and skills. This also applies to variance in rigor and task selection for homework assignments and expectations for make-up work. This applies to depth, quality, and timeliness of teacher descriptive formative feedback on all student work.
3. The team designs and implements agreed-on methods to teach students to self-assess and set goals. Self-assessment includes students using teacher feedback, feedback from other students, or their own self-assessments to identify what they need to work on and to set goals for future learning.





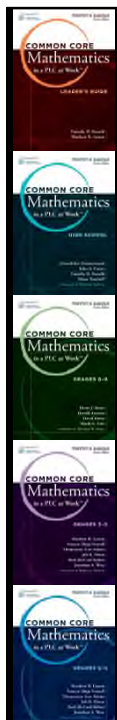
## Goals – The Evidence

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- Mission
- Vision
- Values

### Goals - Results

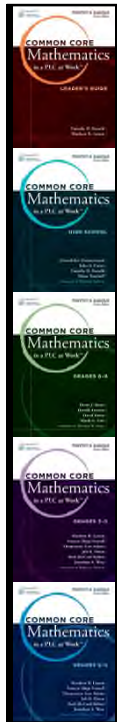
How will we know our *work matters*?  
sets targets that beckon, uses  
data, sets timelines and establishes  
priority actions



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Grade level or Course based  
Collaborative teams are the engine  
that drives the PLC process...

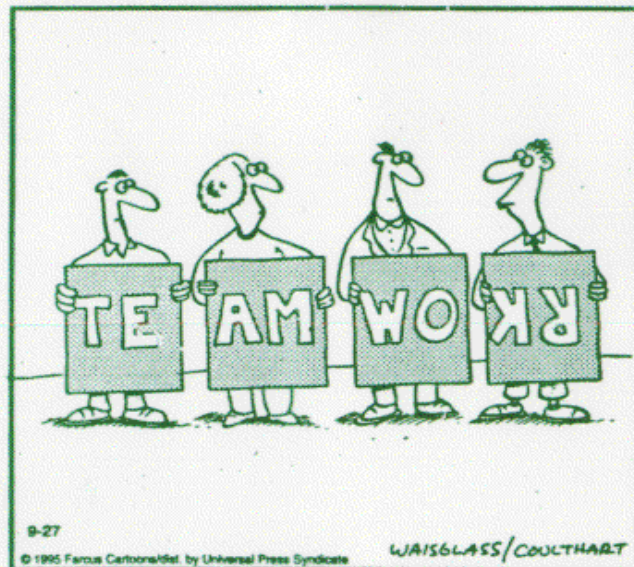
*This is the place where we teach our  
stuff... and **equity** resides...*

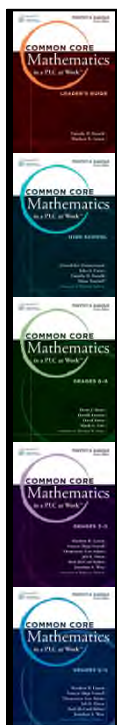


***A great team is a group of people who function together in an extraordinary way , who trust one another, who compliment each other's strengths and compensate for each others limitations, who have common goals and who produce extraordinary results...***



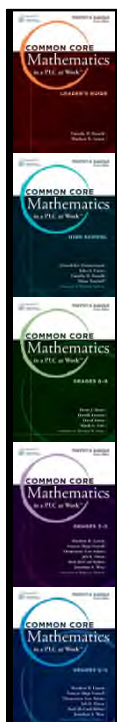
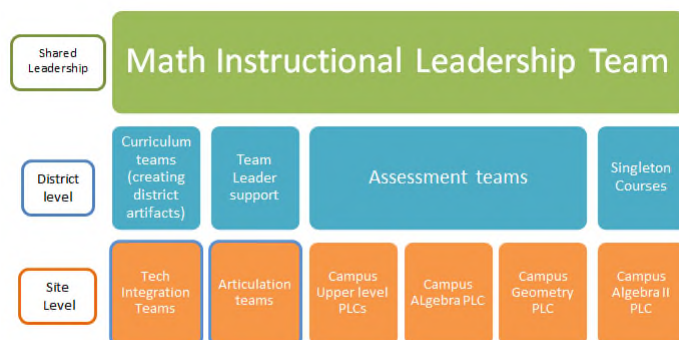
**FARCUS** by Waisglass & Coulthart





## E2 Math Equity and Excellence for all

Once PLC's are created, how can we maintain the progress?



## When do you respond to student learning?

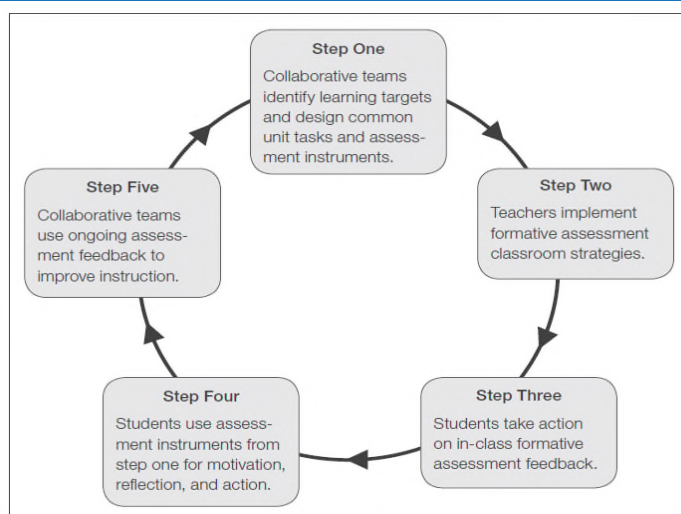
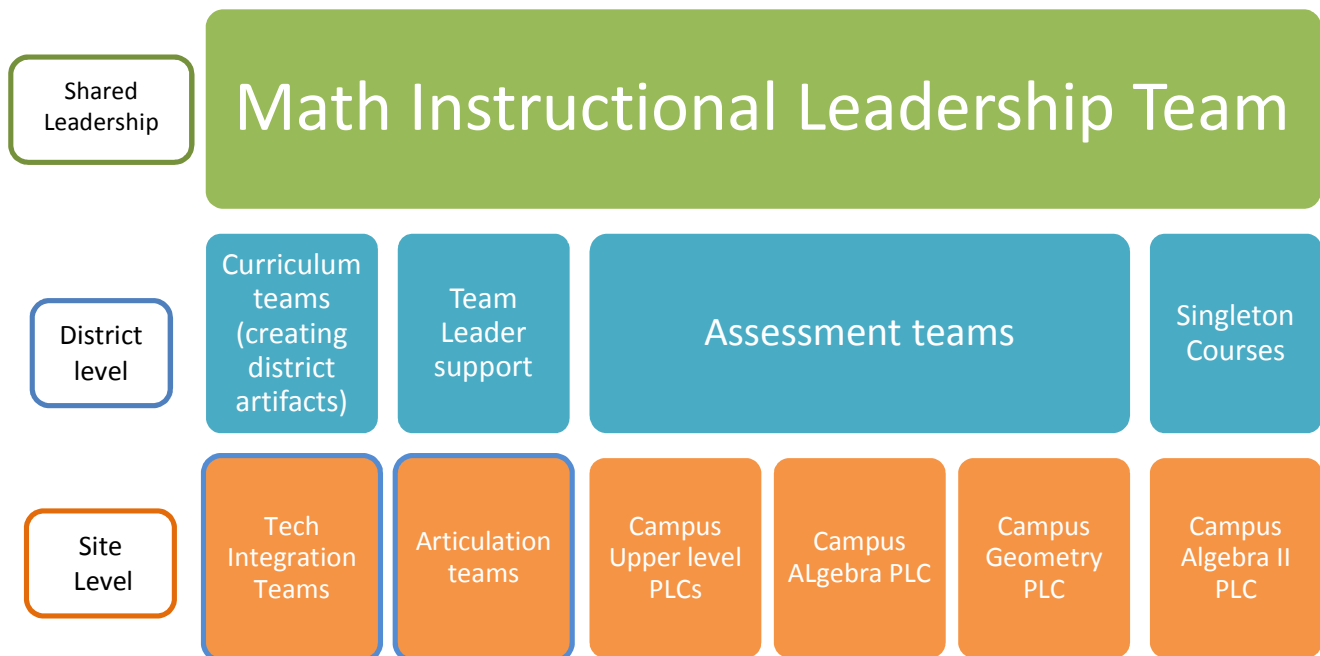
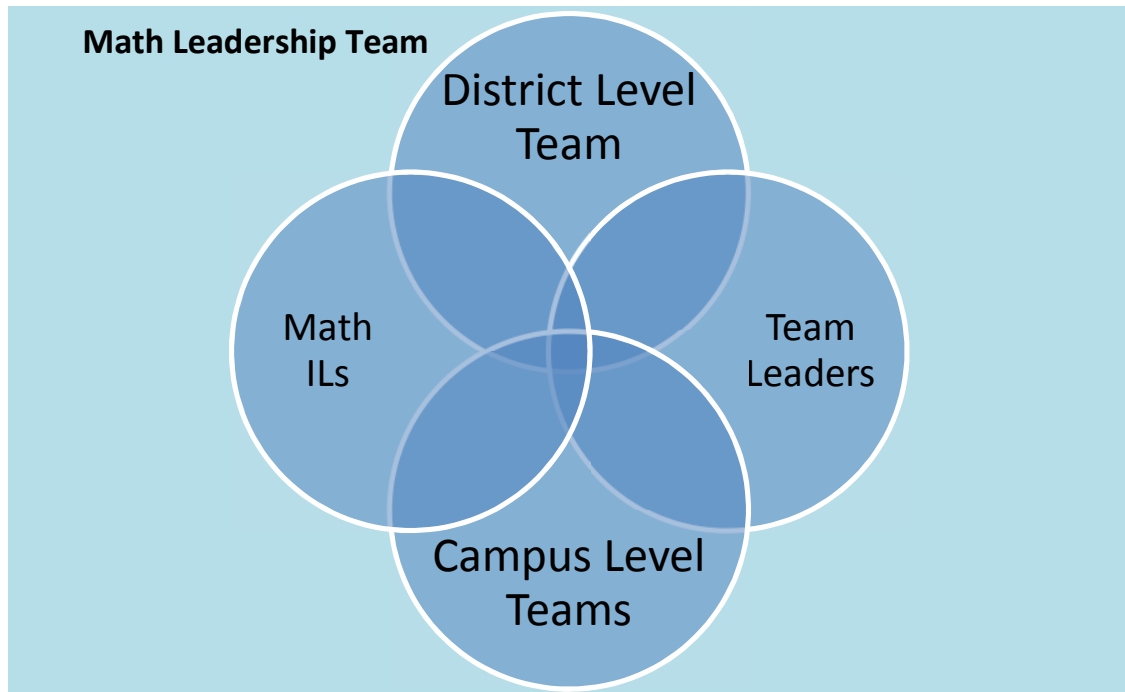
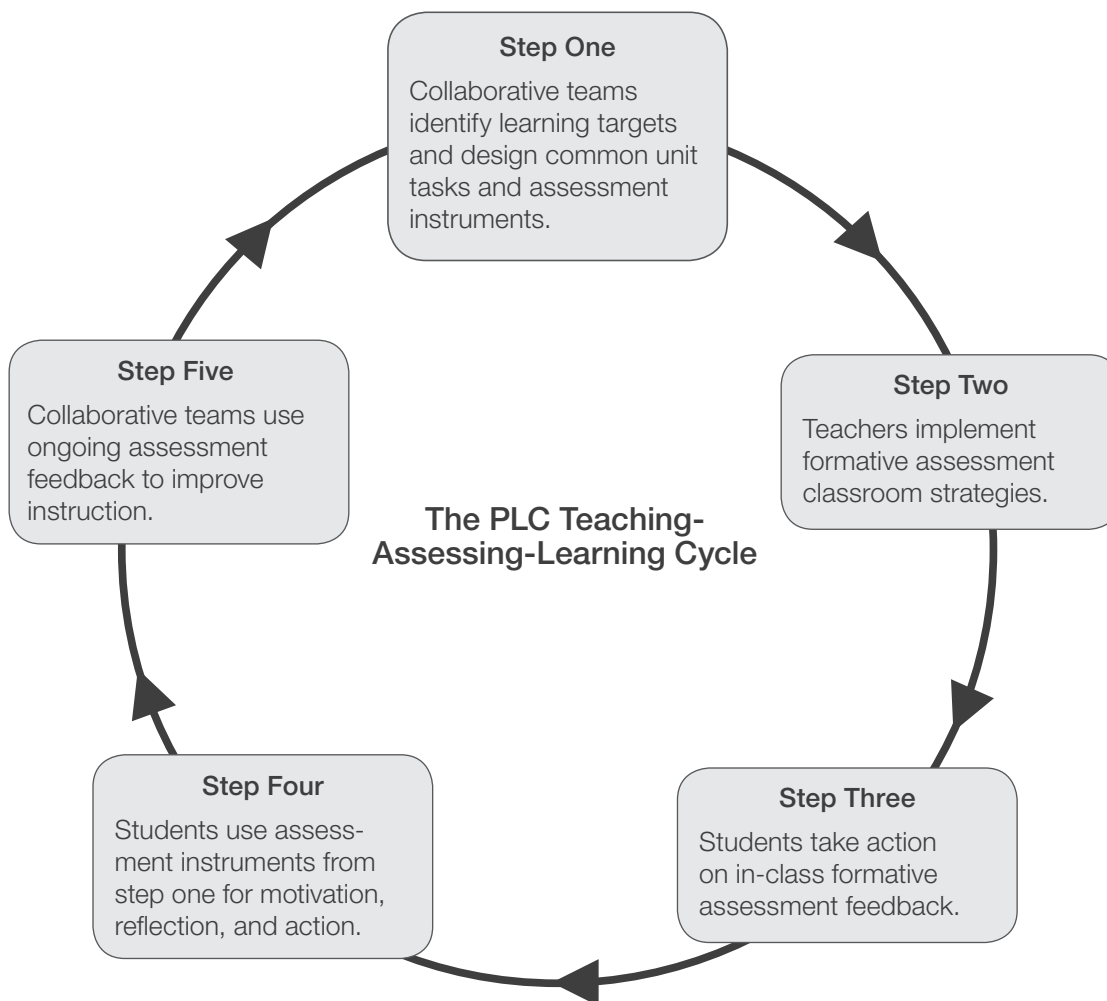


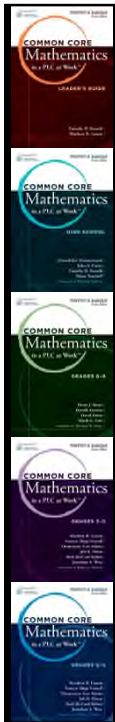
Figure 4.1: The PLC teaching-assessing-learning cycle.

# PUHSD Professional Learning Culture



**Figure 4.1:**  
**The PLC Teaching-Assessing-Learning Cycle**





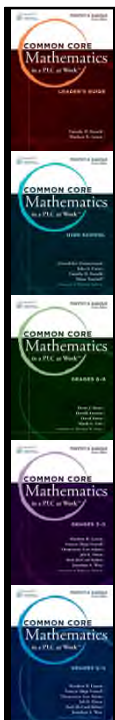
## Research on Intervention

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RTI is a system that “integrates research-based practices, progress monitoring, and required support and is a systematic approach for improved teaching and learning”.

National Center on Response to Intervention (NCRTI, n.d.)

Mona Toncheff © 2012



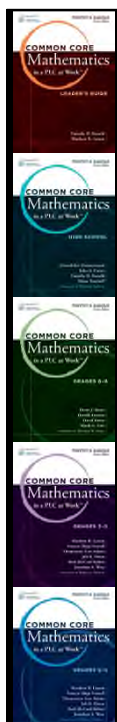
## Research on Intervention

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### *Paradigm Shift*

In a PLC culture, you and your collaborative teams must implement a *Required Response to Intervention* (R<sup>2</sup>TI).

Mona Toncheff © 2012



## Research on Intervention

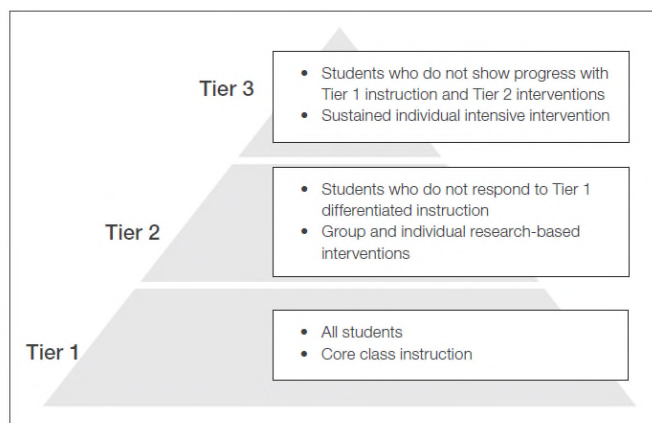
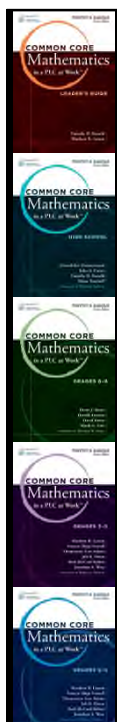
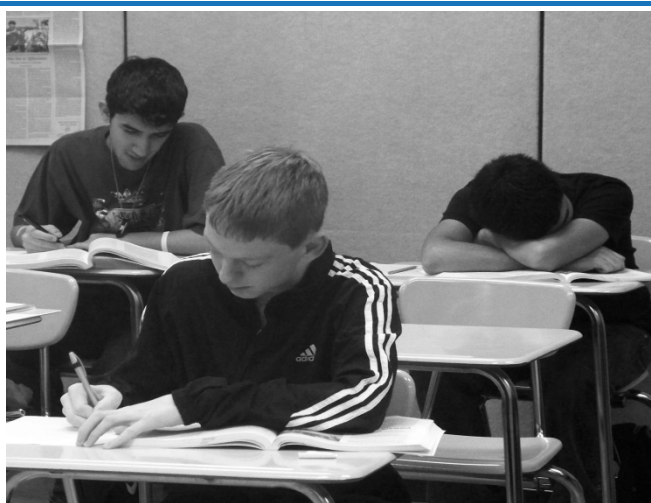


Figure 5.3: Tool to plan for R<sup>2</sup>TI.

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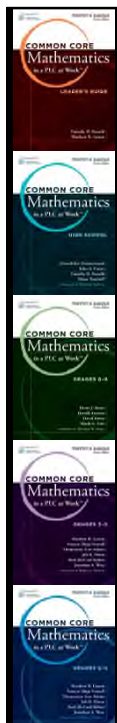


## Why do we need to differentiate?



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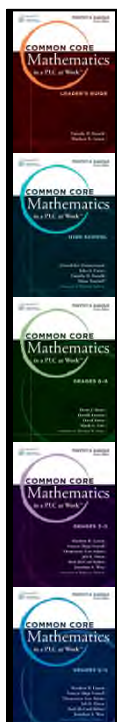


## Differentiated Response to Learning

Finish this sentence:

- A differentiated response to learning is like....

Mona Toncheff © 2012



## Differentiated Response to Learning

*A differentiated response to learning is like finding the right puzzle piece in a 1000 piece puzzle.*



Mona Toncheff © 2012

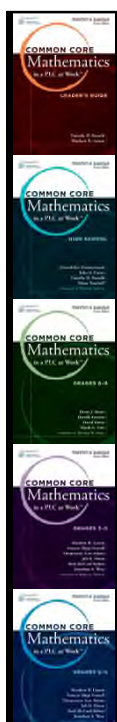




## What interventions do you currently use?

### *Give One, Get One Activity* **Interventions for RTI** (Tier 1, Tier 2, Tier 3)

Tier 1 Instructional Practices	Tier 2 Small Group Considerations	Tier 3 Individual Considerations



## Intervention Sharing



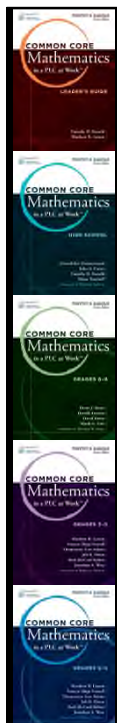
- Give one-get one activity
  - Go around the room and share one intervention and write down one intervention (till sheet is full)
- Come back to your table and share ideas. Add new interventions/strategies to your table.

# ***Give One, Get One Activity***

## **Interventions for RTI**

### **(Tier 1, Tier 2, Tier 3)**

[illegible]



# Reflection on Interventions

## Self-assessment for effective RRTI Interventions

### Tier 1: Differentiated Response to Learning (All students)

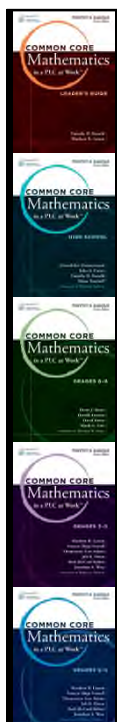
- Core instruction for all students
- Research-based instructional strategies are integrated into daily instruction
- Instruction is systematic and considers assessment data to drive instruction
- Students are engaged in the assessment cycle
- Use of effective instruction including techniques to differentiate instruction to meet diverse learning needs

### Tier 2: Targeted Response to Learning (Small group- Identified students)

- Intervention is required.
- Learning needs are matched with intervention.
- Learning experience is significantly different.
- Intensive progress monitoring is used to identify specific learning gaps.
- All students have access to targeted interventions (materials).
- Students have opportunity for action on the specific learning target gaps.
- Additional instructional time outside the classroom
- Increased frequency and duration of intervention
- Fluid movement into and out of intervention

### Tier 3: Intensive Response to Learning (individual)

- Specific learning or behavioral intervention to match learning or social-emotional need
- Individualized and based on addressing multiple academic and behavioral needs
- This intervention is in addition to classroom instruction
- Progress monitoring as part of the assessment cycle
- Fluid movement into and out of intervention
- More intensive than Tier 2
- Intervention is required.



## Give One, Get One Activity Response To Intervention (RTI) (Tier 1, Tier 2, Tier 3)

	<b>Tier 1</b> <i>Instructional Practices (universal)</i>	<b>REQUIRED</b> <b>Tier 2</b> <i>Strategic, Targeted Small Group Considerations</i>	<b>REQUIRED</b> <b>Tier 3</b> <i>Individual Considerations</i>
★	Students share & critique strategies		
★	Cumulative Review (homework from previous lessons)		
★	Rich Mathematical Tasks (Multi-entry Problems)		
★	Inquiry (Questions) "Can you show me another way?" "Can you convince me?" "How do you know?"		
★	Parallel Tasks		
★	Immediate Corrective Feedback		
★	Explicit Systematic Lesson (direct instruction based on prior evaluation)		

## Self-assessment for effective RRTI Interventions

### Tier 1: Differentiated Response to Learning (All students)

- Core instruction for all students
- Research-based instructional strategies are integrated into daily instruction
- Instruction is systematic and considers assessment data to drive instruction
- Students are engaged in the assessment cycle
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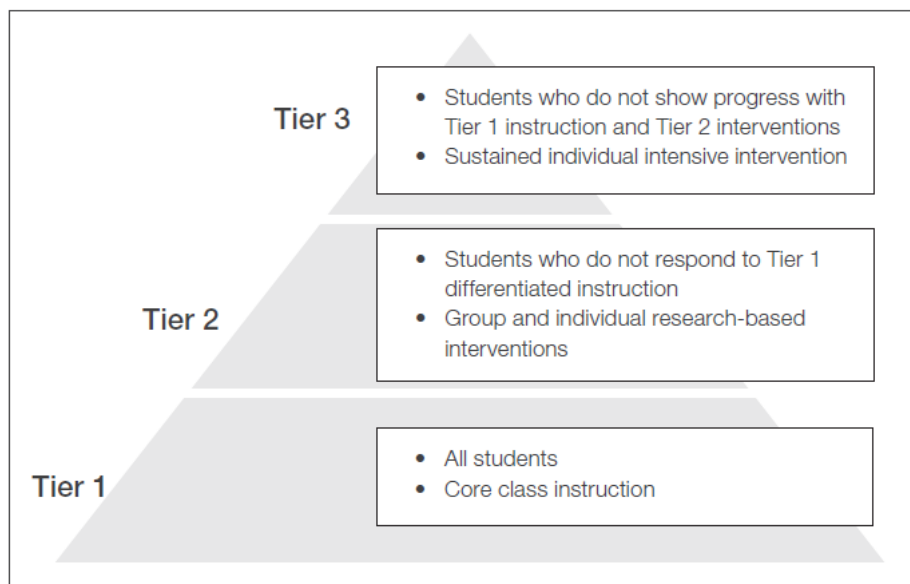
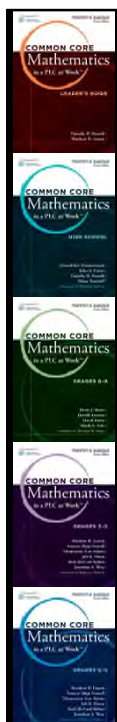


Figure 5.3: Tool to plan for R<sup>2</sup>TI.

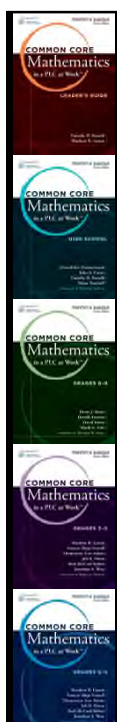


## Differentiated Response to Learning

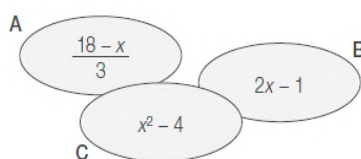
Strategies for a Tier-1 response

- Creating Access through differentiation
- Learning based grading for assessment cycle
- Data driven instructional practices
- Developing the “student” Mathematical practices

Mona Toncheff © 2012



## Access to Mathematical content

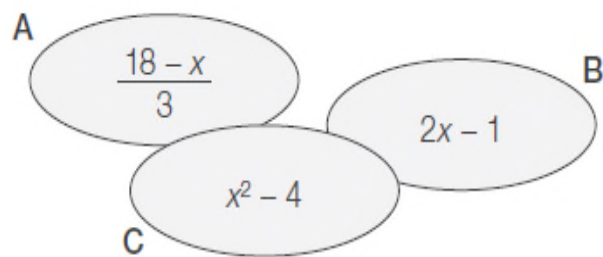


When  $x$  is zero,  $A$  is greater than both  $B$  and  $C$ .

- For what other values of  $x$  is  $A$  the greatest? (Your answer will include that zero value, of course.)
- For what  $x$  values is  $B$  the greatest? And  $C$ ?
- Is there a value of  $x$  when neither  $A$ ,  $B$ , or  $C$  is greater than the other two?

Source: Centre for Mathematical Sciences, n.d.

Figure 5.1: Sample problem for almost total inequality.



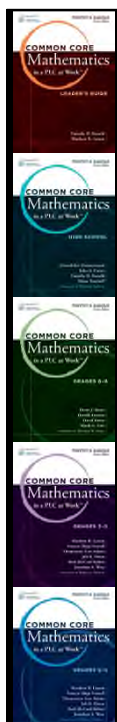
When  $x$  is zero, A is greater than both B and C.

- For what other values of  $x$  is A the greatest? (Your answer will include that zero value, of course.)
- For what  $x$  values is B the greatest? And C?
- Is there a value of  $x$  when neither A, B, or C is greater than the other two?

*Source: Centre for Mathematical Sciences, n.d.*

**Figure 5.1: Sample problem for almost total inequality.**

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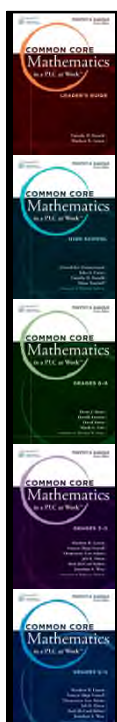


## Differentiated Response to Learning

Table 5.3: Tool for Your Differentiated Response to Learning

Questions to Consider	Reflection
What is the learning target for all, for some, or for few? What is the expected level of mastery of the standard?	
Does this task provide opportunities for different student readiness levels?	
Are there multiple ways to make sense of the mathematics for this standard?	
How can the task be adjusted to challenge students more deeply?	
Can the task be adjusted to increase access to students who are still struggling with background or prior knowledge?	

Visit [go.solution-tree.com/commoncore](http://go.solution-tree.com/commoncore) for a reproducible version of this table.



## Step 4: Teaching – Assessing – Learning Cycle

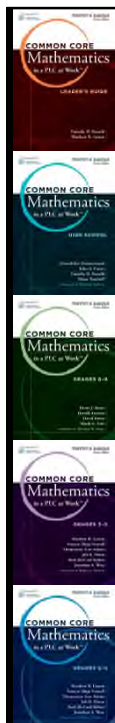
**Students** reflect on successes and focus next step actions based on evidence of areas of weakness, during and after the unit of study - as the assessment instrument is used for formative student learning...



**Table 5.3:**  
**Tool for Your Differentiated Response to Learning**

Questions to Consider	Reflection
What is the learning target for all, for some, or for few? What is the expected level of mastery of the standard?	
Does this task provide opportunities for different student readiness levels?	
Are there multiple ways to make sense of the mathematics for this standard?	
How can the task be adjusted to challenge students more deeply?	
Can the task be adjusted to increase access to students who are still struggling with background or prior knowledge?	

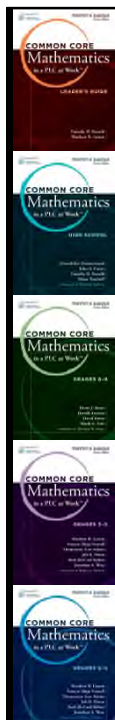




## **Step 4: Teaching – Assessing – Learning Cycle**

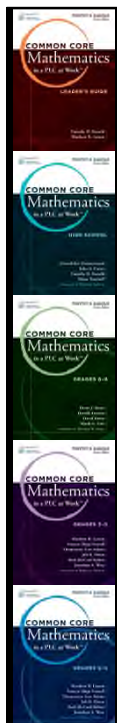
**How can this be done in your school or on your team for each Unit cycle?**

- 1) Create a student goal setting reflection process to identify errors and use the assessment results to form a plan.**
- 2) Create a process for students to act on their plan and take action (allow it to improve their grade)**



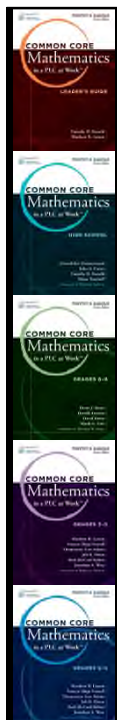
## **Step 5: Teaching – Assessing – Learning Cycle**

**Mathematics faculty reflect on successes and focus next step actions based on evidence of areas of weakness, during and after the unit of study - as the assessment instrument is used for formative adult learning.**



***Few interventions have the same level of impact as assessment for learning. The most intriguing result is that while all students show achievement gains, the largest gains accrue to the lowest achievers.***

**Stiggins, et al. (2006, p. 37)**



## **Assessment for Learning**

---

“ . . . is any assessment for which the first priority in its design and practice is to serve the purpose of promoting students' learning. . . . An assessment activity can help learning if it provides information that teachers and their students can use as feedback in assessing themselves and one another and in modifying the teaching and learning activities in which they are engaged.”

Black and Wiliam, 2004

# Student Self Assessment

## Algebra 2: Unit 6—Quadratics

Name \_\_\_\_\_  
 Period \_\_\_\_\_ Date \_\_\_\_\_

For each learning target record how many questions of each learning target you earned full credit on Readiness Test and then decide how well you understand the learning target at this time. For the Post Test record how many points you earned, determine what kind of mistake you made and the level of mastery for each learning target.

Check point quizzes are given every Friday to monitor learning and to address misconceptions with tutoring before the Unit Test.					✓ Point Quiz							
					Level of Accuracy  Why did I not earn full credit?			Level of Mastery				
								90-100 %	70-89 %	50-69 %	25-49 %	0-24 %
Standards	Learning Target I can....				Questions on Test	Points Earned	Percent	Exceed	Proficient	Approach	Some Evid.	No Evidence
F-IF.7a	I can graph linear and quadratic functions and show intercepts maxima and minima.				1-2	$\frac{\quad}{11}$		10	8	6	4	2
F-IF.8a	I can use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph and interpret these in terms of context.				3-5	$\frac{\quad}{8}$		10	8	6	4	2
F-BF.3	I can identify the effect on a graph when replacing f(x) with f(x) + k, kf(x), f(kx) and f(x + k) for specific values of k and find the values of k given a graph.				6-8	$\frac{\quad}{6}$		10	8	6	4	2
F-IF.5	I can relate the domain of a function to its graph and where applicable, to the quantitative relationship it describes.				9-11	$\frac{\quad}{12}$		10	8	6	4	2
F-BF.1a	I can determine an explicit expression, a recursive process, or steps for calculation from a context.				12-14	$\frac{\quad}{8}$		10	8	6	4	2
F-IF.9	I can compare properties of two functions each represented in a different way—algebraically, graphically, numerically in tables or by verbal descriptions.				15-16	$\frac{\quad}{5}$		10	8	6	4	2
								10	8	6	4	2
								10	8	6	4	2

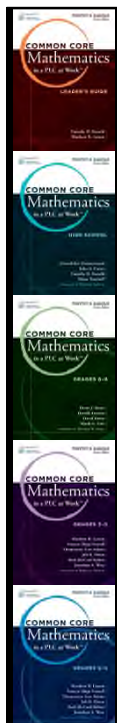
For each learning target you are approaching, some evidence, or no evidence create an action plan of how you will learn that standards to be prepared to take the recovery quiz. Please remember to also write down times and dates. The more specific you are about your plan the more likely you are to stick to it. Whenever is NOT SPECIFIC!!

<p align="center"><b>Action Plan</b></p> <p align="center">Concept mastery options I will attempt prior to taking a Recovery Quiz.</p> <p align="center">(Check all that apply &amp; write dates and times: Morning, Lunch time, Advisory or Afterschool)</p>									
Standards	Learning Target I can....	Standard Recovery Tutoring with Teacher	Standard Recovery Tutoring in MASC	Standard Recovery Tutoring with another teacher/student	Standard Recovery by Independently Completing Review	Standard Recovery by Re-reading notes	Standard Recovery by online Program	Date of Recovery Quiz	Score(s)
F-IF.7a	I can graph linear and quadratic functions and show intercepts maxima and minima.	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):		
F-IF.8a	I can use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph and interpret these in terms of context.	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):		
F-BF.3	I can identify the effect on a graph when replacing $f(x)$ with $f(x) + k$ , $kf(x)$ , $f(kx)$ and $f(x + k)$ for specific values of $k$ and find the values of $k$ given a graph.	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):		
F-IF.5	I can relate the domain of a function to its graph and where applicable, to the quantitative relationship it describes.	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):		
F-BF.1a	I can determine an explicit expression, a recursive process, or steps for calculation from a context.	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):		
F-IF.9	I can compare properties of two functions each represented in a different way— algebraically, graphically, numerically in tables or by verbal descriptions.	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):		
		Date(s):	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):		
		Date(s):	Date(s):	Date(s):	Date(s):	Date(s):	Date(s):		

**Student Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

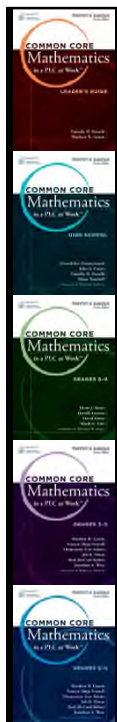
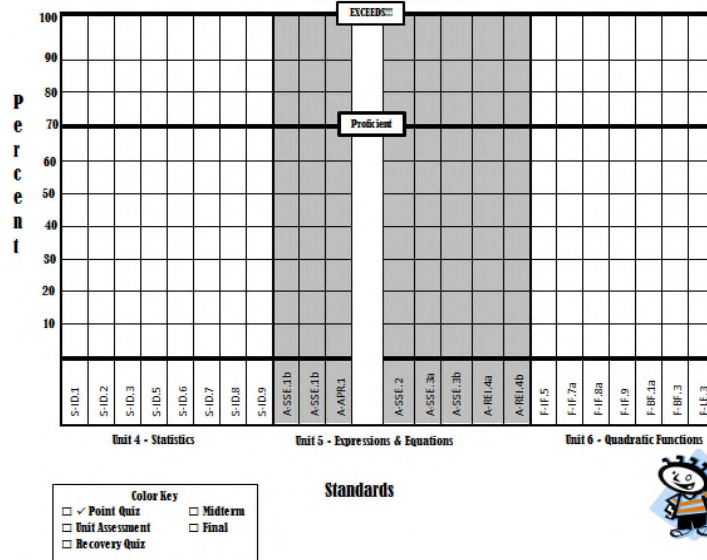
**Parent Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_





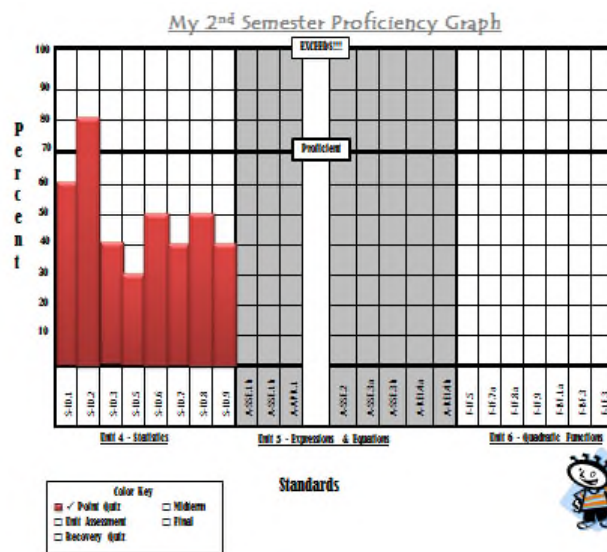
## TIER 1—LBG SEMESTER CYCLE...

My 2<sup>nd</sup> Semester Proficiency Graph

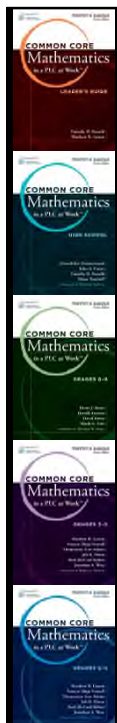


## TIER 1—LBG SEMESTER CYCLE...

CHECK POINT QUIZ

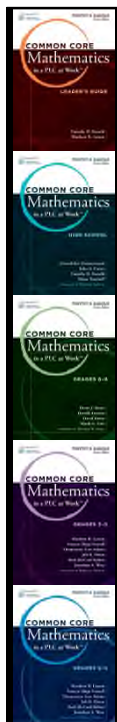
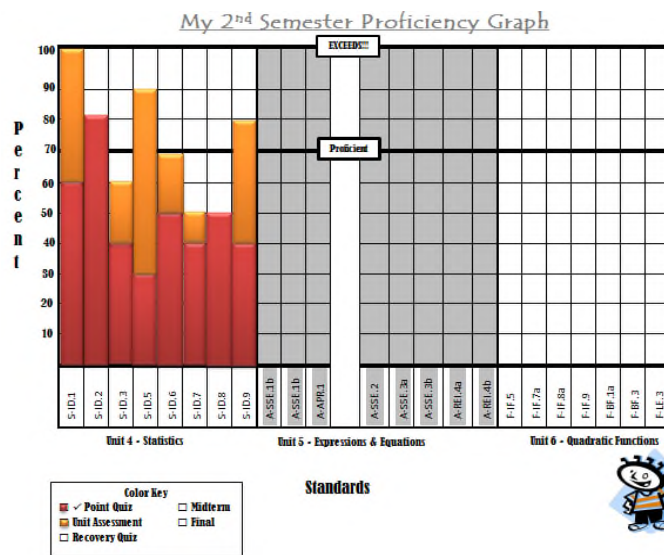






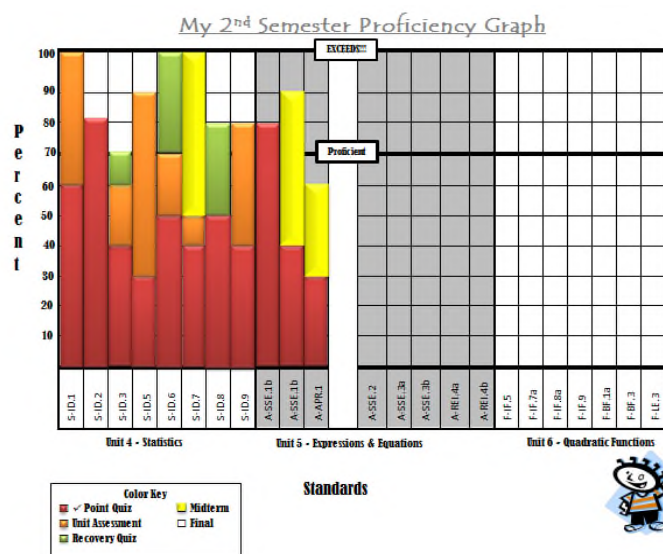
## TIER 1—LBG SEMESTER CYCLE...

### UNIT ASSESSMENT

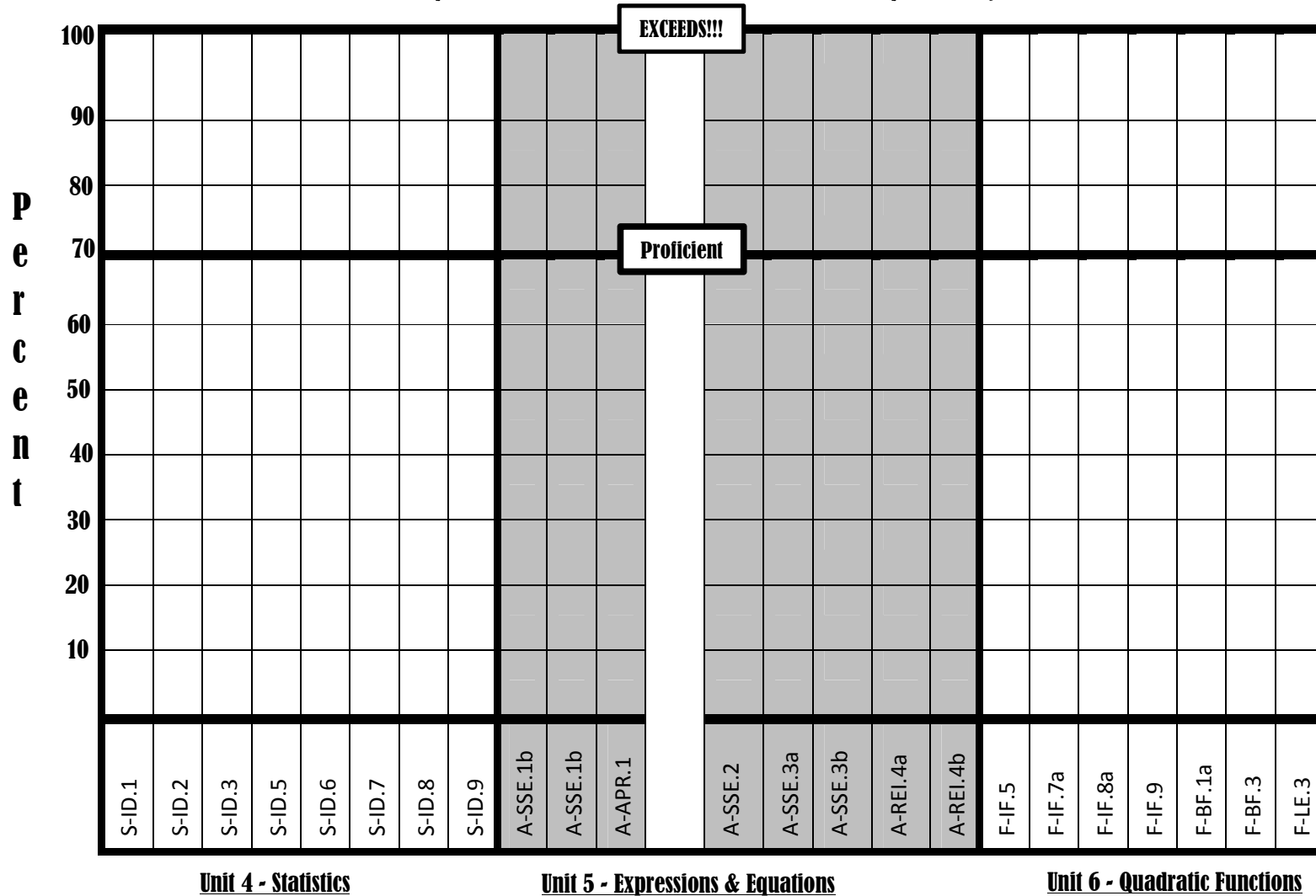


## TIER 1—LBG SEMESTER CYCLE...

### MIDTERM

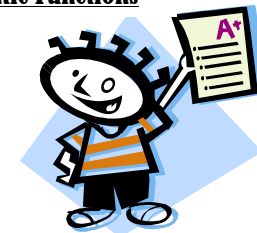


# My 2<sup>nd</sup> Semester Proficiency Graph

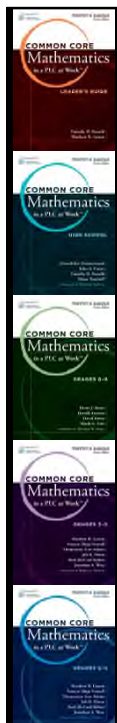


Color Key	
<input type="checkbox"/> ✓ Point Quiz	<input type="checkbox"/> Midterm
<input type="checkbox"/> Unit Assessment	<input type="checkbox"/> Final
<input type="checkbox"/> Recovery Quiz	

**Standards**

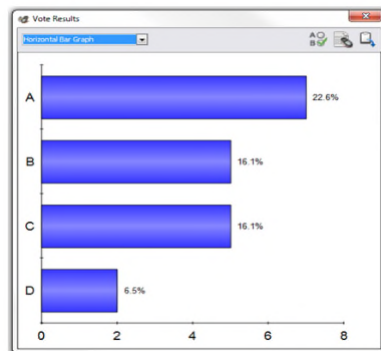




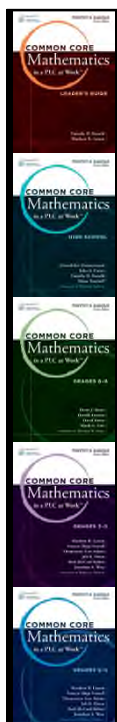


## Differentiated Response to Learning

- Data Driven instructional practices

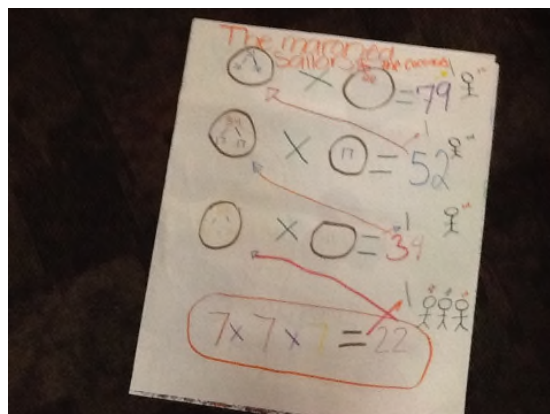


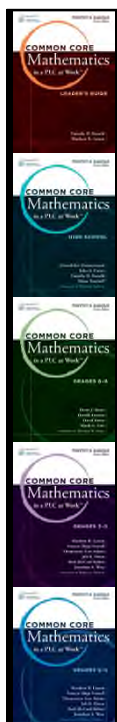
- Socrative.com



## Differentiated Response to Learning

Developing the “student” Mathematical practices



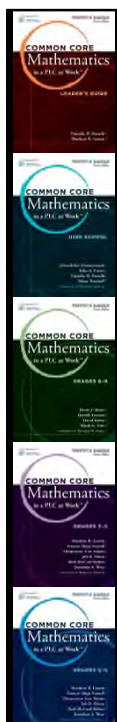


## E2 Math

### Equity and Excellence for all

Teacher leaders are the “Change Agents”

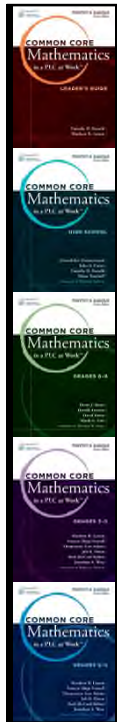
- Every professional development opportunity **focuses** on the 4 critical questions



## Reflection

1. How do you build a Professional Learning culture?
2. How can you sustain teacher leaders?
3. What systems are required to meet all students needs?





**Questions??**

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